



VIRGINIA SPACE GRANT CONSORTIUM

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Virginia CubeSat Constellation of Three Virginia University Satellites Launched from Wallops Island

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Eighty jubilant Virginia CubeSat Constellation team members and guests were there to cheer at the Constellation's three satellites headed to space onboard Wednesday's Antares launch from the Mid-Atlantic Regional Spaceport at Wallops Island, Va. The Cygnus Module onboard the rocket contains three student-designed and developed small satellites making up the Virginia CubeSat Constellation mission, a collaborative project of the Virginia Space Grant Consortium and four of its member universities: Old Dominion University (ODU), Virginia Tech (VT), University of Virginia (UVA), and Hampton University (HU). The Cygnus, which is Northrop Grumman's resupply vehicle for the International Space Station (ISS), will deliver the satellites to the ISS for nearly simultaneous deployment by onboard astronauts so they can orbit together and function as a constellation.

More than 140 undergraduate students across many disciplines at the participating universities have worked on the mission for the past three years under the guidance of faculty advisors.

The three nano-satellites, each about 4 inches cubed and weighing approximately 3 pounds, have been developed and instrumented (one each at ODU, VT and UVA) to obtain measurements of atmospheric properties and quantify atmospheric density with respect to orbital decay.

The ODU satellite, which has a drag brake to intentionally cause orbital decay, is expected to remain in orbit for up to four months. The other two satellites should orbit for up to two years at an altitude of 250 miles before burning up when they re-enter Earth's atmosphere. The satellites will communicate data to ground stations at Virginia Tech, University of Virginia and Old Dominion University for subsequent analysis using an analytical tool being developed by students from Hampton University's Atmospheric and Planetary Sciences Department.

The students named their satellites after the Roman goddesses on the back of the Virginia State Seal who represent the blessings of freedom and peace. UVA has chosen Libertas, the goddess of individual liberties; Virginia Tech selected Ceres, the goddess of agriculture; and Old Dominion University chose Aeternitas, the goddess representing eternity.



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Virginia Space Grant Consortium Director Mary Sandy shares her excitement about the launch. “This launch is a huge mission milestone enabled by the great team work and problem solving skills demonstrated by the four university teams over the three-year spacecraft development period. The experience of designing, building and launching satellites to space has been a tremendous learning experience for the students and faculty involved and has helped to build spaceflight capabilities at the participating universities.” She adds, “Once in orbit, the satellites will be providing valuable data to inform the space community of atmospheric drag impacts on orbital decay.”

The satellite development teams at each of the three universities have been led by female engineering students, with UVA providing overall technical leadership. The launch was an incredibly moving experience for the mission team members. Student Mission Manager and UVA Team Lead Erin Puckette states, “It was such a surreal experience for me to see the rocket lift off and to know that something that I had a part in was on its way to space. I was thrilled to see our work reach this point.” Virginia Tech Team Lead Madison Brodnax notes, “Seeing the launch was so amazing. Not only was it my first rocket launch viewing, but I was also thrilled to be a part of a team that had a payload on the launch.” ODU Team Lead Kim Wright notes a great sense of accomplishment in knowing that the satellites are on their way to space. “Our teams can now shift focus to celebrating the accomplishment and finalizing all of our ground stations so that we can start communicating with our satellites after their deployment from the ISS.”

The mission has benefitted greatly from expert advice from NASA, industry and academic advisors as well as in guidance from NanoRacks, the world’s leading commercial space station company.

The project is part of NASA’s CubeSat Launch Initiative which provides opportunities for small satellite payloads built by universities, high schools and non-profit organizations to fly on upcoming launches. It is funded by the NASA Undergraduate Student Instrument Program and the Virginia Space Grant Consortium. The Undergraduate Student Instrument Program is managed by NASA’s Wallops Flight Facility on Virginia’s Eastern Shore.

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Note: Launch and Post-launch photos and video are available at the Virginia Space Grant Consortium blog site at: <http://vsgc.odu.edu/blog/virginia-cubesat-constellation-launch/>